

WASHINGTON STATE DEPARTMENT OF ECOLOGY
ENVIRONMENTAL INVESTIGATIONS AND LABORATORY SERVICES

October 9, 1989

TO: Don Kjosness

FROM: Art Johnson ^{a.9.} and Pat Hallinan ^{b4}

SUBJECT: NPDES Permit Violations by Weyerhaeuser, Cosmopolis, During Ecology Monitoring Program of March - June, 1989

As you are aware, Pat and I collected a series of effluent samples from the Weyerhaeuser and ITT Rayonier pulp mills in Grays Harbor between March 7 and June 20 of this year. The objective was to assess variability of these effluents during Fisheries' study of low survival of Chehalis River salmon.

The data from chemical analyses and rainbow trout bioassays are now in. During this study, three of the eight samples collected of Weyerhaeuser effluent failed the rainbow trout bioassay requirement in their NPDES permit of 80 percent survival in 65 percent effluent. The results of these bioassays are described in the attached reports by Margaret Stinson. Violations of Weyerhaeuser permit requirements for TSS and pH were not observed; no analysis was done for BOD and fecal coliform, the other parameters in the permit. ITT effluent was meeting permit requirements (rainbow trout, TSS, and pH) on the four occasions it was sampled.

The Weyerhaeuser samples were 10 gallons each, hand composited over a 2-hour period during the discharge cycle. The sampling location was the catwalk just upstream of the outlet structure on pond D. The mill was not given prior notification that the samples were to be collected. Additional sample collection information is given below:

<u>Sample No.</u>	<u>Date</u>	<u>Time</u>
12-8013	March 21, 1989	1305 - 1505
22-8000	May 31, 1989	1145 - 1345
25-8005	June 20, 1989	1605 - 1805

AJ5:pb

Attachments

cc: Dick Cunningham
Norm Glenn
Steve Hunter
Bill Yake

M E M O R A N D U M

April 12, 1989

To: Art Johnson
From: Margaret Stinson ^{MS}
Re: Weyco, Grays Harbor
Results of Salmonid Bioassay

Sample Identification

Laboratory Reference Number: 12-8013
Date Sample Collected: March 21, 1989
Sample Description: "Weyco, GH Mills"
a pale brown liquid, changing to
darker red-brown on neutralizing pH

Methods

Testing for toxic properties was in accordance with the Department of Ecology procedure for "Static Acute Fish Toxicity Test." The test organism was rainbow trout (Oncorhynchus mykiss, formerly Salmo gairdneri). The sample was tested at 65% effluent concentration. Ten trout were added to ten liters of sample/water mixture in each aquarium. Dechlorinated Manchester city water was used for dilution of samples, and as a control. Three replicates were run at each concentration. Cadmium chloride (EPA/EMSL, Cincinnati) was used as a reference toxicant. Test duration was 96 hours. Length, weight, and loading data were based on measurements of control organisms at the end of the test.

The initial pH of this sample measured 2.52 the day testing commenced. To adjust, 45 ml of sodium hydroxide (50 gm/L) solution was added to each ten liter tank of test mixture. This resulted in a pH of approximately 7.23 at the beginning of testing.

Test Results

A full report of test data is attached. Mortality is summarized below.

65% effluent	-	26/30 fish died =	87% mortality
Control	-	0/30 fish died =	0% mortality

The LC50 for the cadmium chloride reference toxicant was estimated at 1.4 ug/L using the graphical method . This is within the range of values normally expected for this organism.



State of
Washington
Department
of Ecology

DATA SHEET FOR STATIC BASIC ACUTE FISH TOXICITY TEST*

Industry/Toxicant Urgeline Chemicals
 Address 111 1/2 Main St.
 Collector Att. J. Blasius
 Date Sample Collected 3/21/87

Laboratory Manchester Analyst M. Shinson

Beginning: Date 3/23/89 Time 1600
 Ending: Date 3/27 Time 1600

Test Organism Oncorhynchus mykiss (Formerly Salmo gairdneri)
 Required Test Temperature Range 25±1°C

Laboratory Reference Number	Test Container No.	Conc. (mg/lr)	Number of Cumulative Deaths		Dissolved Oxygen (mg/l)	pH 25°C	Temperature (C)		Total Hardness (mgCaCO ₃)	Alkalinity (mgCaO)	Conductivity (µMhos/cm)
			0	24			0	24	48	72	96
12-SG13	5	65 mg/l	0	0	9.0	9.0	0	24	48	72	96
	6	65 mg/l	0	0	7.3	7.3	-	-	-	-	11.4
	7	65 mg/l	0	0	7.6	7.6	-	-	-	-	11.4
	8	65 mg/l	0	0	7.8	7.8	-	-	-	-	11.4
	9	65 mg/l	0	0	8.0	8.0	-	-	-	-	11.4
	10	65 mg/l	0	0	8.3	8.3	-	-	-	-	11.4
	11	65 mg/l	0	0	8.5	8.5	-	-	-	-	11.4
	12	65 mg/l	0	0	8.8	8.8	-	-	-	-	11.4
	13	65 mg/l	0	0	9.0	9.0	-	-	-	-	11.4
	14	65 mg/l	0	0	9.2	9.2	-	-	-	-	11.4
	15	65 mg/l	0	0	9.4	9.4	-	-	-	-	11.4
	16	65 mg/l	0	0	9.6	9.6	-	-	-	-	11.4
	17	65 mg/l	0	0	9.8	9.8	-	-	-	-	11.4
	18	65 mg/l	0	0	10.0	10.0	-	-	-	-	11.4
	19	65 mg/l	0	0	10.2	10.2	-	-	-	-	11.4
	20	65 mg/l	0	0	10.4	10.4	-	-	-	-	11.4
	21	65 mg/l	0	0	10.6	10.6	-	-	-	-	11.4
	22	65 mg/l	0	0	10.8	10.8	-	-	-	-	11.4
	23	65 mg/l	0	0	11.0	11.0	-	-	-	-	11.4
	24	65 mg/l	0	0	11.2	11.2	-	-	-	-	11.4
	25	65 mg/l	0	0	11.4	11.4	-	-	-	-	11.4
	26	65 mg/l	0	0	11.6	11.6	-	-	-	-	11.4
	27	65 mg/l	0	0	11.8	11.8	-	-	-	-	11.4
	28	65 mg/l	0	0	12.0	12.0	-	-	-	-	11.4
	29	65 mg/l	0	0	12.2	12.2	-	-	-	-	11.4
	30	65 mg/l	0	0	12.4	12.4	-	-	-	-	11.4
	31	65 mg/l	0	0	12.6	12.6	-	-	-	-	11.4
	32	65 mg/l	0	0	12.8	12.8	-	-	-	-	11.4
	33	65 mg/l	0	0	13.0	13.0	-	-	-	-	11.4
	34	65 mg/l	0	0	13.2	13.2	-	-	-	-	11.4
	35	65 mg/l	0	0	13.4	13.4	-	-	-	-	11.4
	36	65 mg/l	0	0	13.6	13.6	-	-	-	-	11.4
	37	65 mg/l	0	0	13.8	13.8	-	-	-	-	11.4
	38	65 mg/l	0	0	14.0	14.0	-	-	-	-	11.4
	39	65 mg/l	0	0	14.2	14.2	-	-	-	-	11.4
	40	65 mg/l	0	0	14.4	14.4	-	-	-	-	11.4
	41	65 mg/l	0	0	14.6	14.6	-	-	-	-	11.4
	42	65 mg/l	0	0	14.8	14.8	-	-	-	-	11.4
	43	65 mg/l	0	0	15.0	15.0	-	-	-	-	11.4
	44	65 mg/l	0	0	15.2	15.2	-	-	-	-	11.4
	45	65 mg/l	0	0	15.4	15.4	-	-	-	-	11.4
	46	65 mg/l	0	0	15.6	15.6	-	-	-	-	11.4
	47	65 mg/l	0	0	15.8	15.8	-	-	-	-	11.4
	48	65 mg/l	0	0	16.0	16.0	-	-	-	-	11.4
	49	65 mg/l	0	0	16.2	16.2	-	-	-	-	11.4
	50	65 mg/l	0	0	16.4	16.4	-	-	-	-	11.4
	51	65 mg/l	0	0	16.6	16.6	-	-	-	-	11.4
	52	65 mg/l	0	0	16.8	16.8	-	-	-	-	11.4
	53	65 mg/l	0	0	17.0	17.0	-	-	-	-	11.4
	54	65 mg/l	0	0	17.2	17.2	-	-	-	-	11.4
	55	65 mg/l	0	0	17.4	17.4	-	-	-	-	11.4
	56	65 mg/l	0	0	17.6	17.6	-	-	-	-	11.4
	57	65 mg/l	0	0	17.8	17.8	-	-	-	-	11.4
	58	65 mg/l	0	0	18.0	18.0	-	-	-	-	11.4
	59	65 mg/l	0	0	18.2	18.2	-	-	-	-	11.4
	60	65 mg/l	0	0	18.4	18.4	-	-	-	-	11.4
	61	65 mg/l	0	0	18.6	18.6	-	-	-	-	11.4
	62	65 mg/l	0	0	18.8	18.8	-	-	-	-	11.4
	63	65 mg/l	0	0	19.0	19.0	-	-	-	-	11.4
	64	65 mg/l	0	0	19.2	19.2	-	-	-	-	11.4
	65	65 mg/l	0	0	19.4	19.4	-	-	-	-	11.4
	66	65 mg/l	0	0	19.6	19.6	-	-	-	-	11.4
	67	65 mg/l	0	0	19.8	19.8	-	-	-	-	11.4
	68	65 mg/l	0	0	20.0	20.0	-	-	-	-	11.4
	69	65 mg/l	0	0	20.2	20.2	-	-	-	-	11.4
	70	65 mg/l	0	0	20.4	20.4	-	-	-	-	11.4
	71	65 mg/l	0	0	20.6	20.6	-	-	-	-	11.4
	72	65 mg/l	0	0	20.8	20.8	-	-	-	-	11.4
	73	65 mg/l	0	0	21.0	21.0	-	-	-	-	11.4
	74	65 mg/l	0	0	21.2	21.2	-	-	-	-	11.4
	75	65 mg/l	0	0	21.4	21.4	-	-	-	-	11.4
	76	65 mg/l	0	0	21.6	21.6	-	-	-	-	11.4
	77	65 mg/l	0	0	21.8	21.8	-	-	-	-	11.4
	78	65 mg/l	0	0	22.0	22.0	-	-	-	-	11.4
	79	65 mg/l	0	0	22.2	22.2	-	-	-	-	11.4
	80	65 mg/l	0	0	22.4	22.4	-	-	-	-	11.4
	81	65 mg/l	0	0	22.6	22.6	-	-	-	-	11.4
	82	65 mg/l	0	0	22.8	22.8	-	-	-	-	11.4
	83	65 mg/l	0	0	23.0	23.0	-	-	-	-	11.4
	84	65 mg/l	0	0	23.2	23.2	-	-	-	-	11.4
	85	65 mg/l	0	0	23.4	23.4	-	-	-	-	11.4
	86	65 mg/l	0	0	23.6	23.6	-	-	-	-	11.4
	87	65 mg/l	0	0	23.8	23.8	-	-	-	-	11.4
	88	65 mg/l	0	0	24.0	24.0	-	-	-	-	11.4
	89	65 mg/l	0	0	24.2	24.2	-	-	-	-	11.4
	90	65 mg/l	0	0	24.4	24.4	-	-	-	-	11.4
	91	65 mg/l	0	0	24.6	24.6	-	-	-	-	11.4
	92	65 mg/l	0	0	24.8	24.8	-	-	-	-	11.4
	93	65 mg/l	0	0	25.0	25.0	-	-	-	-	11.4
	94	65 mg/l	0	0	25.2	25.2	-	-	-	-	11.4
	95	65 mg/l	0	0	25.4	25.4	-	-	-	-	11.4
	96	65 mg/l	0	0	25.6	25.6	-	-	-	-	11.4
	97	65 mg/l	0	0	25.8	25.8	-	-	-	-	11.4
	98	65 mg/l	0	0	26.0	26.0	-	-	-	-	11.4
	99	65 mg/l	0	0	26.2	26.2	-	-	-	-	11.4
	100	65 mg/l	0	0	26.4	26.4	-	-	-	-	11.4
	101	65 mg/l	0	0	26.6	26.6	-	-	-	-	11.4
	102	65 mg/l	0	0	26.8	26.8	-	-	-	-	11.4
	103	65 mg/l	0	0	27.0	27.0	-	-	-	-	11.4
	104	65 mg/l	0	0	27.2	27.2	-	-	-	-	11.4
	105	65 mg/l	0	0	27.4	27.4	-	-	-	-	11.4
	106	65 mg/l	0	0	27.6	27.6	-	-	-	-	11.4
	107	65 mg/l	0	0	27.8	27.8	-	-	-	-	11.4
	108	65 mg/l	0	0	28.0	28.0	-	-	-	-	11.4
	109	65 mg/l	0	0	28.2	28.2	-	-	-	-	11.4
	110	65 mg/l	0	0	28.4	28.4	-	-	-	-	11.4
	111	65 mg/l	0	0	28.6	28.6	-	-	-	-	11.4
	112	65 mg/l	0	0	28.8	28.8	-	-	-	-	11.4
	113	65 mg/l	0	0	29.0	29.0	-	-	-	-	11.4
	114	65 mg/l	0	0	29.2	29.2	-	-	-	-	11.4
	115	65 mg/l	0	0	29.4	29.4	-	-	-	-	11.4
	116	65 mg/l	0	0	29.6	29.6	-	-	-	-	11.4
	117	65 mg/l	0	0	29.8	29.8	-	-	-	-	11.4
	118	65 mg/l	0	0	30.0	30.0	-	-	-	-	11.4
	119	65 mg/l	0	0	30.2	30.2	-	-	-	-	11.4
	120	65 mg/l	0	0	30.4	30.4	-	-	-	-	11.4
	121	65 mg/l	0	0	30.6	30.6	-	-	-	-	11.4
	122	65 mg/l	0	0	30.8	30.8	-	-	-	-	11.4
	123	65 mg/l	0	0	31.0	31.0	-	-	-		

WASHINGTON STATE DEPARTMENT OF ECOLOGY
ENVIRONMENTAL INVESTIGATIONS AND LABORATORY SERVICES
MANCHESTER LABORATORY

M E M O R A N D U M

To: Art Johnson
From: Margaret Stinson ^{mo}
Subject: Weyco, Grays Harbor
Results of Salmonid Bioassay
Date: June 26, 1989

Sample Identification

Laboratory Reference Number: 22-8000
Date Sample Collected: May 31, 1989
Sample Description: "Weyco, GH Mills"
A brown liquid that darkened on neutralizing pH

Methods

Testing for toxic properties was in accordance with the Department of Ecology procedure for "Static Acute Fish Toxicity Test." The test organism was rainbow trout (Oncorhynchus mykiss, formerly Salmo gairdneri). The sample was tested at 65% effluent concentration. Ten trout were added to ten liters of sample/water mixture in each aquarium. Dechlorinated Manchester city water was used for dilution of samples, and as a control. Three replicates were run at each concentration. Cadmium chloride (EPA/EMSL, Cincinnati) was used as a reference toxicant. Test duration was 96 hours. Length, weight, and loading data were based on measurements of control organisms at the end of the test.

The initial pH of the sample was 2.66. To neutralize, 36 ml of NaOH solution (50 gm/L) was added to each ten liter tank of effluent/dilution water mixture. After equilibration, the pH was approximately 7.4 in each tank.

Test Results

A full report of test data is attached. Mortality is summarized below.

65% effluent	-	29/30 fish died =	97% mortality
Control	-	2/30 fish died =	6.7% mortality

The LC50 for the cadmium chloride reference toxicant was greater than 2.5 ug/L.



State of
Washington
Department
of Ecology

DATA SHEET FOR STATIC BASIC ACUTE FISH TOXICITY TEST*

Contract

Industry/Tax ID#

Address

Collector

Date Sample Collected

Beginning Date

Ending Date

Time

Time

Laboratory

Analyst

Time

Time

1600

1600

1600

1600

M. Shilson

M. Shilson

M. Shilson

M. Shilson

Test Organism Rainbow Trout (Oncorhynchus mykiss formerly Salmo gairdneri)

Required Test Temperature Range

Number of Cumulative Deaths

Dissolved Oxygen (mg/l)

pH

Temperature (C)

Laboratory Reference Number

Test Container No.

Conc. Length

Deaths

0

24

48

72

96

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WASHINGTON STATE DEPARTMENT OF ECOLOGY
ENVIRONMENTAL INVESTIGATIONS AND LABORATORY SERVICES
MANCHESTER LABORATORY

M E M O R A N D U M

To: Art Johnson
From: Margaret Stinson^{TPS}
Subject: Weyco, Grays Harbor
Results of Salmonid Bioassay
Date: July 11, 1989

Sample Identification

Laboratory Reference Number: 25-8005
Date Sample Collected: June 20, 1989
Sample Description: "Weyco, GH Mills"
An amber-colored liquid that darkened on neutralizing pH

Methods

Testing for toxic properties was in accordance with the Department of Ecology procedure for "Static Acute Fish Toxicity Test." The test organism was rainbow trout (Oncorhynchus mykiss, formerly Salmo gairdneri). The sample was tested at 65% effluent concentration. Ten trout were added to five liters of sample/water mixture in each aquarium. Dechlorinated Manchester city water was used for dilution of samples, and as a control. Three replicates were run at each concentration. Cadmium chloride (EPA/EMSL, Cincinnati) was used as a reference toxicant. Test duration was 96 hours. Length, weight, and loading data were based on measurements of control organisms at the end of the test.

The initial pH of the sample was 2.56. To neutralize, 27 ml of sodium hydroxide solution (50 gm/L) was added to each five liter tank of effluent/dilution water mixture. After equilibration, the pH was approximately 7.4 in each tank. In previous tests, pH drifted downward only slightly as the test progressed. Downward drift was much more marked in this test, with final pH ranging from 6.53 to 6.78 in the three replicates.

Test Results

A full report of test data is attached. Mortality is summarized below.

65% effluent	-	30/30 fish died	=	100% mortality
Control	-	0/30 fish died	=	0% mortality

The LC50 for the cadmium chloride reference toxicant was estimated at 2.7 ug/L using the graphical method. This is within the range of values normally expected for this organism.

